processing chamber at a pressure of between about 1 Torr and about 12 Torr, generating the plasma by supplying a power density between about 0.3 watts/cm^2 and about 3.3 watts/cm^2 to the processing chamber, and maintaining the plasma between about 20 and about 60 seconds.

16 cont'd

35. (New) The method of claim 34, wherein the low dielectric constant layer has an oxygen content of about 6% or less by atomic concentration.

36. (New) The method of claim 24, wherein depositing the passivation layer is performed in situ with depositing the silicon carbide layer.

37. (New) The method of claim 13, wherein modifying a surface of the silicon carbide layer is performed in situ with depositing the silicon carbide layer.

REMARKS

This is intended as a full and complete response to the Office Action dated September 27, 2002, having a shortened statutory period for response set to expire on December 27, 2002. Claims 1-31 are pending in the application. Claims 1, 2, 4-12, 24, 25, and 31, were considered by the Examiner and stand rejected. Claims 3 and 26-30 are objected to as being dependent upon rejected base claims and would be allowable if rewritten in independent form. Claim 1 has been rewritten to incorporate the subject matter of claim 3; and claim 24 has been rewritten to incorporate the subject matter of claim 26. Claim 6 is amended to more clearly define an aspect of the invention. Applicants present new claims 32-37 for consideration by the Examiner. Applicants cancel claims 3 and 26 without prejudice. Claims 13-23 are allowed by the Examiner. Applicants believe that no new matter has been introduced in this response.

Claims 1, 2, and 4-12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, or under 35 U.S.C. § 103(a) as being unpatentable over, *Yasuhara* (JP 11-162969). The Examiner asserts that the process as recited by Applicants in claim 1 is disclosed in the *Yasuhara* reference. The Examiner further asserts that the flow

rates, power density, time, and pressure of the plasma treatment are prima facie obvious over the reference. Applicants respectfully respond to this rejection.

Claim 1 as amended exactly corresponds to objected claim 3. *Yasuhara* does not teach, show, or suggest depositing a low dielectric constant layer comprising silicon carbide on the substrate in a processing chamber, introducing a processing gas into the processing chamber, generating a plasma of the processing gas in the processing chamber, and exposing the low dielectric constant layer to the plasma of the processing gas, as recited in claim 1, and claims 2, 4, 5, 8, 9, 11, and 12, dependent thereon.

Yasuhara discloses treating a spin-on glass (SOG) layer with a plasma of a gas containing Ar, Kr, Ne, Xe, N_2, and/or He to improve interlayer adhesion between SOG layers.

Yasuhara does not teach, show, or suggest depositing a low dielectric constant layer on the substrate in a processing chamber by a plasma enhanced chemical vapor deposition process and treating the low dielectric constant layer with an in situ passivating process comprising introducing a nitrating gas selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof, into the processing chamber, generating a plasma of the processing gas in the processing chamber, and exposing the low dielectric constant layer to the plasma of the processing gas, as recited in claim 6, and claims 7, 10, and 32-35, dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 24, 25 and 31 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Alok et al.* (U.S. Patent No. 6,373,076). The Examiner asserts that the process as recited by Applicants in claim 24 is disclosed in the *Alok et al.* reference. Applicants respectfully respond to this rejection.

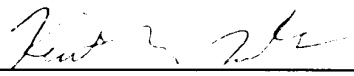
Claim 24 as amended exactly corresponds to objected claim 26. *Alok et al.* does not teach, show, or suggest depositing a silicon carbide layer on the substrate and depositing a passivating layer comprising silicon and nitrogen on the silicon carbide layer by a process comprising introducing a silicon containing gas and a nitrogen containing gas into a process chamber containing the substrate, initiating a plasma in the process chamber, reacting the silicon containing gas and the nitrogen containing

gas in the presence of the plasma to deposit the passivating layer comprising silicon and nitrogen, as recited in claim 24, and claims 25, 27-31, and 36 dependent thereon.

The prior art made of record is noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action. Accordingly, allowance of the claims is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed aspects of the invention. Having addressed all issues set out in the office action, applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A method for processing a substrate, comprising:

depositing a low dielectric constant layer comprising silicon carbide on the substrate in a processing chamber;

introducing a processing gas into the processing chamber;

generating a plasma of the processing gas in the processing chamber; and

exposing the low dielectric constant layer to the plasma of the processing gas.

6. (Amended) [The method of claim 1, wherein the processing gas is] A method for processing a substrate, comprising:

depositing a low dielectric constant layer on the substrate in a processing chamber by a plasma enhanced chemical vapor deposition process; and

treating the low dielectric constant layer with an in situ passivating process comprising:

introducing a nitrating gas selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof, into the processing chamber;

generating a plasma of the processing gas in the processing chamber; and

exposing the low dielectric constant layer to the plasma of the processing gas.

10. (Amended) The method of claim [1] 6, wherein the [chamber pressure is between about 100 milliTorr and about 25 Torr] the low dielectric constant layer comprises silicon carbide.

24. (Amended) A method for forming a low dielectric constant barrier layer on a substrate, comprising:

depositing a silicon carbide layer on the substrate; and

depositing a passivating layer comprising silicon and nitrogen on the silicon carbide layer by a process comprising:

introducing a silicon containing gas and a nitrogen containing gas into a process chamber containing the substrate;

initiating a plasma in the process chamber;

reacting the silicon containing gas and the nitrogen containing gas in the presence of the plasma to deposit the passivating layer comprising silicon and nitrogen.

27. (Amended) The method of claim [26] 24, wherein the silicon containing gas is selected from the group of silane, methylsilane, trimethylsilan[c]e, substituted derivatives thereof, and combinations thereof.

28. (Amended) The method of claim [26] 24, wherein the nitrogen containing gas is selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof.

29. (Amended) The method of claim [26] 24, wherein the plasma is generated by supplying a power density between about 0.3 watts/cm^2 and about 3.2 watts/cm^2 to the chamber.

30. (Amended) The method of claim [26] 24, wherein the chamber pressure is between about 1 Torr and about 25 Torr.